REMARKS

Claims 1, 3, 4, 7, and 10-20 are pending in this application. By this Amendment, the specification and claims 1, 7 and 12 are amended, claims 2, 5-6 and 8-9 are canceled and claims 13-20 are withdrawn from consideration. The specification is amended to remove the references to the claims. Reconsideration in view of the above-identified amendments and the following remarks is respectfully requested.

Claims 1, and 5-12 were rejected under 35 USC §102(b) over Japanese Patent No. 8-170177 ("Japan 177"), U.S. Patent No. 4,652,352 to Saieva, U.S. Patent No. 5,180,771 to Cowan ("Cowan") or WO/00/52229 to Pacholik et al. ("Pacholik"). These rejections are respectfully traversed.

In response, claims 5, 6, 8 and 9 are canceled. Amended claim 1 is directed to liquid treatment equipment. The liquid treatment equipment includes a treatment solution bath that is capable of accommodating a treatment solution including a metallic ion for implementing liquid treatment of a substrate. The equipment further includes a treatment solution circulating system connected to the treatment solution bath, that circulates the accommodated treatment solution. The equipment according to claim 1 also includes a product removal unit disposed in the treatment solution circulating system, which removes the reaction product except the metallic ion. The product removal unit includes an electric absorbing unit to absorb reaction product due to liquid treatment contained in the circulated treatment solution and a heating unit to heat the circulated treatment solution. The liquid treatment equipment also includes an additive agent supplier connected to the treatment solution circulating system. The additive agent supplier supplies in the circulated treatment solution an organic component additive agent and/or a sulfur component additive agent.

By contrast, Japan 177 discloses a liquid treatment equipment having a treatment solution bath, a treatment solution circulating system and a product removal unit. Japan 177 removes a metal compound. The liquid treatment equipment disclosed by Japan 177 does not disclose the claimed product removal unit. Japan 177 does not disclose, teach or suggest a product removal unit that removes a reaction product except for a metallic ion. Applicants respectfully submit that Japan 177 does not disclose the subject matter of amended claim 1.

Saieva discloses a process and apparatus for recovering metals from dilute solutions utilizing ion exchange and electrolyte recovery. As such, Saieva does not disclose liquid treatment equipment having a product removal unit that removes a reaction product except

for a metallic ion. Instead, Saieva recovers the metals in the solution. Applicants respectfully submit that Saieva does not disclose the subject matter of claim 4.

Cowan discloses a method and apparatus for regenerating an etch solution whereby aluminum and aluminum alloys are removed from an etch solution. The aluminum and aluminum alloys are removed from the etch solution so that the etch solution may be reused. As such, since Cowan teaches the removal of aluminum from the etch solution, it does not disclose liquid treatment equipment having a product removal unit that removes a reaction product except for a metallic ion. Applicants respectfully submit that Cowan does not disclose the subject matter of amended claim 1.

Pacholik discloses a process for recovering copper from a alkaline etch bath. Like Japan 177, Saieva and Cowan, discussed above, Pacholik is directed to the recovery of a metal from a solution not the removal of a reaction product except for a metallic ion. Like these other references Pacholik does not disclose a liquid treatment equipment having the claimed product removal unit that removes a reaction product except for a metallic ion. Applicants respectfully submit that Pacholik does not disclose the subject matter of amended claim 1.

Amended claim 7 is directed to liquid treatment equipment. The liquid treatment equipment includes a treatment solution bath accommodating a treatment solution including a metallic ion for implementing liquid treatment to a substrate. A treatment solution circulating system is connected to the treatment solution bath and circulates the accommodated treatment solution. The liquid treatment equipment includes a recycle bath, disposed in the middle of the treatment solution circulating system that is capable of reserving the circulated treatment solution and implements a recycle treatment of the reserved treatment solution. A product removal portion, disposed in the recycle bath, includes an electric absorbing unit to absorb a reaction product due to the liquid treatment contained in the circulated treatment solution and a heating unit to heat the circulated treatment solution. The product removal portion removes the reaction product except the metallic ion. The liquid treatment equipment also includes an additive agent supplier connected to the treatment solution circulating system that supplies in the circulated treatment solution an organic component additive agent and/or sulfur component additive agent.

As discussed above in connection with claim 1, Japan 177, Saieva, Cowan and Pacholik all disclose removing or recovering a metal. As such, these references do not disclose, teach or suggest liquid treatment equipment having a product removal portion that

removes the reaction product except for the metallic ion. Applicants respectfully submit that Japan 177, Saieva, Pacholik and Cowan do not disclose the subject matter of claim 7. Claims 10 and 11 depend from claim 7 and are allowable over Japan 177, Saieva, Pacholik and Cowan for at least the same reasons.

Amended claim 12 is directed to a liquid treatment method employing liquid treatment equipment comprising a treatment solution bath capable of accommodating a treatment solution including a metallic ion for implementing liquid treatment to a substrate, a treatment solution circulating system connected to the treatment solution bath and circulating the accommodated treatment solution, a product removal unit disposed in the treatment solution circulating system and including an electric absorbing unit to absorb a reaction product due to the liquid treatment contained in the circulated treatment solution and a heating unit to heat the circulated treatment solution and removing the reaction product except a metallic ion, and an additive agent supplier, connected to the treatment solution circulating system that supplies in the circulated treatment solution an organic component additive agent and/or a sulfur component additive agent. The method includes circulating the treatment solution by means of the treatment solution circulating system while or after implementing the liquid treatment to the substrate. The method further includes removing the reaction product except for the metallic ion due to the liquid treatment contained in the circulated treatment solution by means of the product removal unit.

As discussed above in connection with claims 1 and 7, Japan 177, Saieva, Pacholik and Cowan each disclose removing a metal while treating a liquid solution. The product removal unit claimed by applicants removes the reaction product except for the metallic ion. As such, these references do not teach the product removal unit or the claimed method using the product removal unit, which does not remove the metallic ion. Accordingly, these references do not disclose, teach or suggest the method of claim 12.

Reconsideration and withdrawal of the rejection of claims 1, 7, and 10-12 based upon Japan 177, Saieva, Pacholik and Cowan are respectfully requested.

Claims 2-4 were rejected under 35 USC §103 over Japan 177, Saieva, Pacholik or Cowan in view of U.S. Patent No. 6,569,307 to Blachier et al. ("Blachier") or U.S. Patent No. 6,391,209 to Belongia et al. ("Belongia"). This rejection is respectfully traversed.

In response, claim 2 is canceled.

Belongia discloses a system for selectively removing organic and inorganic contaminants from plating baths. Blachier discloses a system for plating objects. These

references do not disclose removing a reaction product except for a metallic ion. As such, Belongia and Blachier do not disclose the deficiencies of Japan 177, Saieva, Pacholik and Cowan, discussed above. Accordingly, the combination of these references does not disclose, teach or suggest the subject matter of claims 3 and 4. Reconsideration and withdrawal of the rejections are respectfully requested.

Applicants respectfully submit that the claims define subject matter that is patentable over the prior art cited of record. Should any issues require further resolution, applicants request that the Examiner contact applicants' undersigned attorney by telephone for resolution.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,
PILLSBURY WINTHROP LLP

GLENN T. BARRETT
Reg. No. 38705
Tel. No. (703) 905-2011
Fax No. (703) 905-2500

Date: September 1, 2004
P.O. Box 10500
McLean, VA 22102
(703) 905-2000